Listing of the Claims:

1. (Currently Amended) A carburizing method for carrying out carburization in an atmosphere gas containing less than 20% by volume of carbon monoxide under a pressure of 13 to ~~4,000~~ 1,000 Pa, wherein the carburization is carried out while analyzing the composition of the atmosphere gas by measuring a thermal conductivity with a Pirani vacuum gauge and adjusting at least one of temperature, pressure, and composition of the atmosphere gas according to the analysis result.

2. (Cancelled).

3. (Cancelled)

4. (Cancelled).

5. (Currently Amended) A carburizing apparatus for carrying out carburization in an atmosphere gas containing less than 20% by volume of carbon monoxide under a pressure of 13 to ~~4,000~~ 1,000 Pa, wherein the carburizing apparatus comprises a carburizing chamber for housing an object to be treated;

gas analysis means at least having ~~an instrument~~ a Pirani vacuum gauge for measuring a thermal conductivity for analyzing a composition of the atmosphere gas in said carburizing chamber during carburization;

at least one of temperature adjustment means for changing a temperature inside of said carburizing chamber according to an analysis result by said gas analysis means;

pressure adjustment means for changing a pressure inside of said carburizing chamber according to the analysis result by said gas analysis means;

atmosphere gas composition adjustment means for changing the composition of said atmosphere gas inside of said carburizing chamber according to the analysis result by said gas analysis means;

and an information display apparatus for displaying information of the analysis results according to the analysis results of said gas analysis means.

6. (Cancelled).

7. (Cancelled).

8. (Cancelled).

9. (Currently Amended) A carburizing apparatus comprising:

a carburizing chamber for housing an object to be treated;

said chamber maintained to a pressure of 13 to ~~4000~~ 1,000 Pa during carburization and having an atmosphere gas of less than 20% by volume of carbon monoxide;

means for maintaining the atmosphere gas within the chamber at the less than 20% by volume of carbon monoxide;

gas analysis means having ~~an instrument~~ a Pirani vacuum gauge for measuring a thermal conductivity for analyzing a composition of the atmosphere gas in the chamber during carburization;

a temperature adjustment means for changing a temperature inside of the chamber according to an analysis result by the gas analysis means;

pressure adjustment means for changing a pressure inside of said carburizing chamber according to the analysis result by said gas analysis means;

atmosphere gas composition adjustment means for changing the composition of said atmosphere gas inside of said carburizing chamber according to the analysis result by said gas analysis means; and

an information display apparatus for displaying information of the analysis results according to the analysis results of said gas analysis means.

10. (Currently Amended) A carburizing method comprising the steps of:

housing an object in a carburizing chamber;

maintaining an atmosphere gas containing less than 20% by volume of carbon monoxide under a pressure of 13 to ~~4,000~~ 1,000 Pa in the carburizing chamber;

measuring a thermal conductivity of the atmosphere gas a Pirani vacuum gauge for analyzing the composition of the atmosphere gas;

using the measured thermal conductivity result for adjusting the composition of the atmosphere gas; and

using the measured thermal conductivity result for adjusting at least one of the temperature and pressure of the atmosphere gas.